2008

Review of the American Society for Engineering Education (ASEE) Global Colloquium, Cape Town, South Africa

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DATE: **November 15, 2008**

RE: **ASEE Global Colloquium**

The following report addresses topics established by the Technical Foundation of America prior to attending the ASEE Global Colloquium October 19-24, 2008 in Cape Town, South Africa. Specifically, this manuscript will address what the international engineering education community and the technology education community might have to offer each other. Responses appear below each of the three categories: impacts on curriculum, professional development, and collaboration.

Impacts on Curriculum

The impact of engineering on the curriculum of technology education has drawn considerable interest. Some technology educators feel engineering content should be the focus of technology education (Lewis 2004, 2005; Wicklein, 2006). Other scholars feel engineering content is only part of what comprises technology education curriculum (Ritz, 2006). This debate is likely to continue as both technology education and engineering education receive more attention.

There are several key reasons why each profession can learn from the other when it comes to curriculum. First, technology educators can learn a lot about the research conducted by engineers. Few technology educators have the time and resources to conduct research on materials and processes as comprehensively as engineers. The research conducted by engineers can help technology educators maintain current technical content within the curriculum. Second, engineering educators can learn from the expertise technology educators have for developing, implementing, and assessing curriculum. The bulk of research conducted by technology educators is on curriculum, not technical content (Sontos, 2005; Zuga, 1994). This experience can help engineering educators as they strive to become more proficient as curriculum developers, implementers, and assessors. The third reason for curriculum collaboration has to do with repetition. Many of the ASEE Global Colloquium presentations mirrored curriculum issues technology educators have addressed for years. Examples of curriculum overlap seen at the Colloquium included presentations on problem based learning, developing activities to enhance learning, and successful practices. These are routine topics at the International Technology Education Association (ITEA) annual conference, the PATT conferences, and even the Biennial Technology Education Research Conference (TERC).

Perhaps the greatest lesson technology educators can learn from engineering educators with regard to curriculum is to use real world problems. The Global Colloquium highlighted worldwide as well as regional issues and the engineering education community was very focused on addressing these issues. Technology educators typically use a lot of hypothetical situations and contrived activities. If the profession were to have students seek out societal problems as the basis of technology education curriculum, then I feel it would make the curriculum more relevant to students and could potentially add value to their communities. Such an anthropological approach is not new to technology education (e.g. Maley, 1973). However, I believe the profession needs to fortify the use of this approach since it can help students learn contextually and truly addresses society's needs and wants.

Professional Development

It appears that technology educators are more willing than engineering educators to join the other profession in professional development activities. Dr. Mark Sanders, Dr. Ken Welty, and Dr. Mary Annette Rose have been active within the ASEE K-12 and Pre-College Education Division for several years and Dr. Michael De Miranda is the current chair. Other technology educators such as Dr. Aaron Clark and Dr. Petros Katsioloudis are active in the Engineering Design Graphics Division. I had the opportunity, along with Dr. John Ritz, to join the Technological Literacy Constituent Committee this past year in Pittsburgh, Pennsylvania. From my perspective, it appears technology educators are more active in engineering education professional development activities than engineering educators are in technology education activities. Discussions with participants at the Global Colloquium, both from the U.S.A. and abroad, showed that few were aware of technology education/design and technology.

My experience in Pittsburgh and Cape Town has convinced me that participation in engineering education activities by technology educators is not enough. Technology educators need to be proactive with their outreach. Perhaps if the profession invited key engineering educators to attend the ITEA annual conference as guests then they would understand the close connection between the two professions. This worked well with the Technology for All Americans project when William Wulf was president of the ASEE. On a smaller scale, perhaps technology educators could have engineering educators attend state conferences or even help judge regional TECA or TSA events. Internationally, it would be interesting to get the PATT conference to co-locate with the Global Colloquium.

It was very encouraging to see Dr. Gerhard Salinger from the National Science Foundation talking with several conference attendees. He did an excellent job explaining the technology education profession, *Standards for Technological Literacy* (ITEA, 2000), and how the two professions could help one another through professional development. My personal networking led me to Fran Saunders from the University of KwaZulu Natal in Durban, South Africa. Fran is new to the university and is very nervous about her

teaching and scholarship. We spent quite some time discussing the ITEA, CTTE, and professional publications that would be helpful to her. Her excitement was refreshing and similar to that of a student that just found the answer to an elusive problem. This experience convinced me that technology education can have a role in the professional development of engineering educators.

Collaboration

In addition to curriculum and professional development, there are at least three other key areas in which engineering education and technology education can collaborate: research, instruction, and accreditation. Each of these areas was the focus of an individual track at the Global Colloquium and offers multiple opportunities for collaboration.

DeBoer (2008), a doctoral student from Vanderbilt University, presented a partial picture of research collaboration. She stressed the need for engineering educators to look at educational research to improve teaching and learning. DeBoer's presentation focused on education research in general and was based on her graduate work and attendance at the American Educational Research Association (AERA) annual conference. I believe her case would have been stronger if she cited specific areas of research and focused on groups for collaboration. For areas of research, curriculum, instructional strategies, and assessment are three areas that engineering education could benefit from collaboration with educators. Specific groups that would profit from research collaboration include all of the science, technology, engineering, and mathematics (STEM) disciplines.

Instruction in both engineering education and technology education could benefit from collaboration. Felder (2008) kicked off the practice track by discussing key methods for sound instruction. His entire presentation resembled an overview of an introductory teaching methods course. Content included writing objectives, planning content, learning styles, and cooperative learning. I was amazed how the audience praised Felder for the workshops and presentations he has given around the world. This praise was well founded on one hand because Felder has researched education and did a great job articulating the profession. However, I was amazed how many people had not thought to analyze their own teaching and educate themselves in order to become more effective practitioners. This is where the greatest benefit for collaboration can occur. As mentioned earlier, technology educators can help engineering educators become better teachers and engineering educators can help technology educators teach current technical content.

I did not attend any of the accreditation track presentations at the Global Colloquium but it is easy to see the potential for collaboration. The Accreditation Board for Engineering and Technology (ABET) is clearly pushing for stronger instructional practices that are based on research (2008). Technology educators have a long history of accrediting their programs (Wise, 2006) and are uniquely positioned to help engineering educators improve their practice. Overlapping content and the political pressures of integrating STEM disciplines are the two most prominent reasons for collaborating. Technology educators can also learn from engineering educators when it comes to accreditation.

Many of the accreditation presentations at the Global Colloquium focused on different nations and their accreditation issues. Learning about these different education systems and accreditation processes is sure to strengthen the accreditation process and profession. International technology education is highlighted in the PATT conference series but presentations tend to focus on research and philosophy, not accreditation. It would be beneficial for the technology education profession to emulate the engineering education profession by presenting different accreditation paradigms. This is especially true in the United States since the Council on Technology Teacher Education (CTTE) works with the ITEA and the National Council for Accreditation of Teacher Education (NCATE) to develop accreditation standards.

Conclusion

This manuscript has attempted to address the key issues that the international engineering education community and the technology education community might have to offer each other. There are tremendous opportunities in the areas of curriculum, professional development, collaboration, research, instruction, and accreditation. The engineering education community is large, established, and politically well-connected. Technology education, on the other hand, is much smaller, somewhat disjointed, and is building on limited political support. For these and other reasons, the technology education profession must be proactive with engineering education and other disciplines. As a start, the profession needs to work alongside and educate other professionals about the long history and positive impact we have on students and the broader educational enterprise.

References:

Accreditation Board for Engineering and Technology (ABET). (2008). *Mission, vision, and strategic plan*. Retrieved November 15, 2008 from http://www.abet.org/mission.shtml

DeBoer, J. (2008). *Drawing on other stakeholders in engineering education research – students and education scholars*. Cape Town, South Africa: 7th ASEE Global Colloquium on Engineering Education.

Felder, R. (2008). *Successful practices in engineering education*. Keynote Presentation, Practice Track. Cape Town, South Africa: 7th ASEE Global Colloquium on Engineering Education.

International Technology Education Association (ITEA). (2000). *Standards for Technological Literacy: Student Assessment, Professional Development, and Program Standards*. Reston, VA: Author.

Lewis, T. (2005). A turn to engineering: The continuing struggle of technology education for legitimization as a school subject. *Journal of Technology Education, 16*(1), 21-39.

Lewis, T. (2004). Coming to terms with engineering design as content. *Journal of Technology Education, 16*(2), 37-54.

Maley, D. (1973). *The Maryland plan: The study of industry and technology for the junior high school*. New York, NY: Bensziger Bruce & Glencoe, Inc.

Ritz, J.M. (2006). Technology and engineering are both addressed through technology education. *The Technology Teacher, 66*(3), 19-21.

Sontos, D. A. (2005). *Directions of dissertation research at universities preparing future technology education teacher educators*. Unpublished graduate research paper. Norfolk, Virginia: Old Dominion University.

Wicklein, R. (2006). Five good reasons for engineering design as the focus for technology education. *The Technology Teacher, 65*(7), 25-29.

Wise, A. (2006). ITEA celebrates 20 years of NCATE. *The Technology Teacher, 65*(7), 30-31.

Zuga, K. (1994). *Implementing technology education: A review and synthesis of the research literature*. Information series no. 356. ERIC Clearinghouse on Adult, Career, and Vocational Education, Columbus, Ohio. ED 372 305.